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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,335

05/15/2006

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EXAMINER

ASDJODI, MOHAMMAD REZA

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,335	Applicant(s) ITOH ET AL.	
	Examiner MOHAMMAD R. ASDJODI	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/12/.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-20, 22-26 and 28-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-20, 22-26 and 28-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/09/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10, 12-20, 22-26, and 28-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shroeder et al. (US 2003/0124959 A1) in view of Ando et al. (US 2003/0004085), and Liu et al. (US 6,299,795).

Regarding claims 1-4, 12, 15-16, 28 and 30, Shroeder et al. teach a composition for copper chemical and mechanical polishing (CMP) using a polymeric complexing agent to provide a planarized surface; [¶.0005, 0046]) comprising: water; [¶.0007], an

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acidic, and an oxidizing etchant (hydrogen peroxide); [¶.0013, 0097], and phosphates; [¶.0012], wherein the pH is in the range of 2-9; [¶.0047].

Shroeder et al. does not explicitly teach phosphate esters of C_6-C_{22} , but teach that phosphate and sulfonic acid surfactant are substantially functional equivalents. However, Ando et al. teach a composition for removing polishing material of CMP from a polishing pad. Ando et al.'s composition, similarly, comprises surfactants, acids and ester phosphates by the amount of 0.1 to 20%; [¶.0044, 0045]. Shroeder et al. and Ando et al. are analogous (or combinable) art because they are from the same field of endeavour, that surface polishing compositions and removing the same from a surface. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the phosphate ester of Ando et al. with polishing composition of Shroeder et al. These surfactants are equivalent alternatives therefore the motivation would have been to make a polishing composition with an improved characteristics such as stability, miscibility, and boundary improved lubrication property.

Shroeder et al. does not explicitly teach presence of an azole polymer with a vinyl group and two or more azole moiety in molecule (even though do teach azole ingredient in their composition by the amount of 0.0001 to 2%; [¶.0051]). However, Liu et al. teach a polishing composition comprising polymers of vinylpyrrolidone/vinylimidazole in their composition; [4: 25-32]. Liu et al. and Shroeder et al. are analogous (or combinable) art because they are from the same field of endeavour, that of surface polishing compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize the polymers of vinylpyrrolidone/

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vinylimidazole of Liu et al. (with desired adjustment of molecular weight during polymerization) in polishing composition of Shroeder et al. The motivation would have been to make a polishing composition with an improved characteristics such as stability in liquid phase (due to vinyl groups), low volatility, and high lubrication property and surface protection.

Regarding claims 5, 6, 19, 20, 22, and 23, Shroeder et al. teach a composition comprising: acid and base in the range of 0.7%; [¶.0044], [0097], hydrogen peroxide as oxidizing agent by the amount of 3%; [¶.0013, ¶.0014, 0018], acids such as phosphonic acid; [¶.0012], and a base such as ethylenediamin; [¶.0097].

Regarding claims, 7-8, and 24, Shroeder et al. teach a composition comprising: an abrasive by the amount of 0.1 to 20%; [¶.0032], wherein the abrasive is aluminum oxide; [¶.0044].

Regarding claims, 9-10, 25 and 26, Shroeder et al. teach a composition comprising: a surfactant by the amount of 1%; [¶.0052], wherein the surfactant is polystyrenesulfonic acid; [¶.0014].

Shroeder et al. does not teach the amount of surfactant in the range of 5%.

The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the amount of surfactant in the polishing composition. Motivation would have been to minimizing the dishing of copper during the polishing process. A prima facie case of obviousness may

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be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

Regarding claims, 13, 14, and 29, Shroeder et al. teach presence of glycine as amino acid by the amount of 0.75w%; [¶.0079].

Regarding claims 17 and 18, Shroeder et al. teach presence of polymeric carboxylic acid (fatty acid) as polymeric complexing agent by the amount of 0.5 to 2w%; [¶.0038].

Regarding claims 31, 32, 37 and 38, Shroeder et al. teach mixing of a solution of polishing composition which can be stored for future use; [¶.0059, 0060].

Regarding claims 33, 34, 35 and 36, Shroeder et al. teach a method and a polishing composition (a kit) that is capable of polishing and planarizing surfaces containing copper, tantalum layers; [¶.0093].

Response to Arguments

Applicant's arguments with respect to claims 1-20, and 22-38 have been considered but are moot in view of the new ground(s) of rejection. Claims 11, and 27 are cancelled by applicant.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. M. Reza Asdjodi whose telephone number is (571)270-3295. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harold Y Pyon/
Supervisory Patent Examiner, Art Unit 1796

/M. R. A./
Examiner, Art Unit 1796
05/27/08
